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1.Introduction

- The device is a professional infrared 32x32 pixels imager thermometer with 2.2" color TFT LCD display, 32x32 pixels imager & a micro SD memory card for capturing images (BMP) for viewing on your pc, providing fast ,easy and accurate reading for most surface temperature measurements.
- This produce combines the convenience of an infrared thermometer with the visual advantage of a thermal imager creating a brand new tool category a troubleshooting camera with infrared heat map.

2.Features

- 2.2" 320x240 TFT LCD display
- IR temperature measurement with resolution 32x32 pixels
- Image capture frequency 9Hz
- Thermal sensitivity (NETD) 100mK
- Hot spot and cold spot tracking
- Visual camera & images capture (BMP)
- Micro SD memory card
- Date/time setup controls ,Adjustable emissivity & trigger lock
- Li-Ion rechargeable battery
- USB interface for charge and download image form SD memory

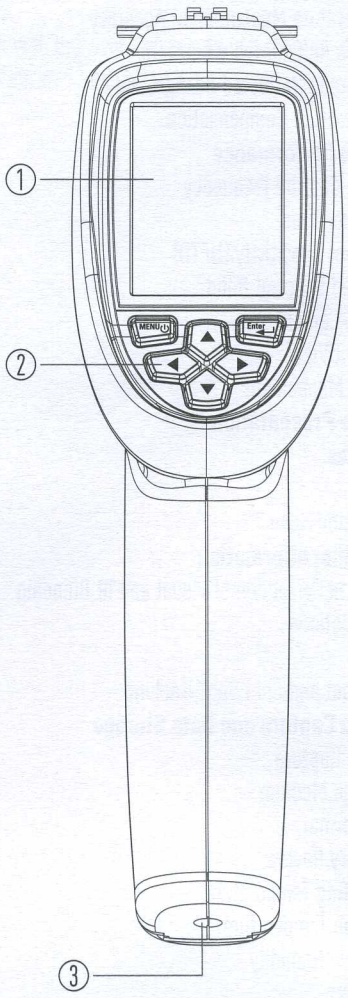
3.Specifications

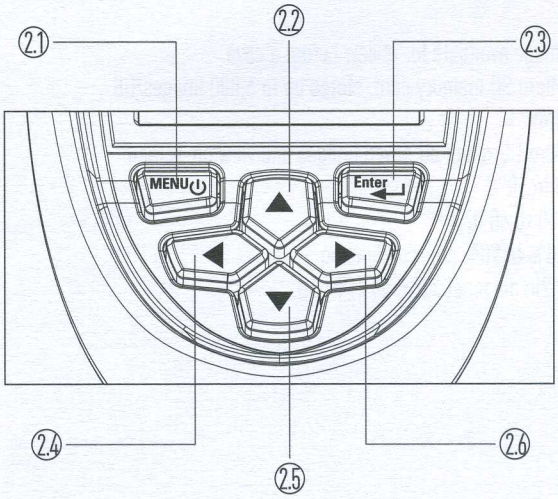
Temperature	
Temperature Measurement Range	-20 to 600°C (-4 to 1112F)
Temperature Measurement Accuracy	±2% ±2°C as tested (at 25°C)
On-Screen Emissivity Correction	Yes
On-Screen Reflected Background	Yes
Temperature Compensation	Yes
Image Performance	
Image Capture Frequency	9Hz
Detector Type	Uncooled Pyroelectric Ceramic
Thermal Sensitivity (NETD)	100mK
Infrared Spectral Band	8~14μm
Visual Camera	30M pixels
Field of View	33° x 33°
Focus Mechanism	Fixed Focus
Image Presentation	
Palettes	Hot Metal, Ironbow, Rainbow, Rainbow High Contrast, Grayscale(white hot) and Grayscale (black hot)
Level and Span	Auto
Blending Information	
Parallax Correction of Visual and IR Blending	0.5m, 1.0m, 2.0m, 3.0m
View Options	Blending of the visual and the infrared from full infrared to full visual in 25% steps
Hot Spot and Cold Spot Tracking	Yes
Image Capture and Data Storage	
Image Capture	Image available for review before a save
Storage Medium	Micro SD memory card, stores up to 6,000 images/GB
File Format	BMP
Memory Review	Scroll through all saved images and view on-screen
Operating Temperature	0 to 50°C
Storage Temperature	-20 to 60°C
Relative Humidity	10% to 90% non-condensing
Display	2.2in diagonal 320x240 TFT LCD

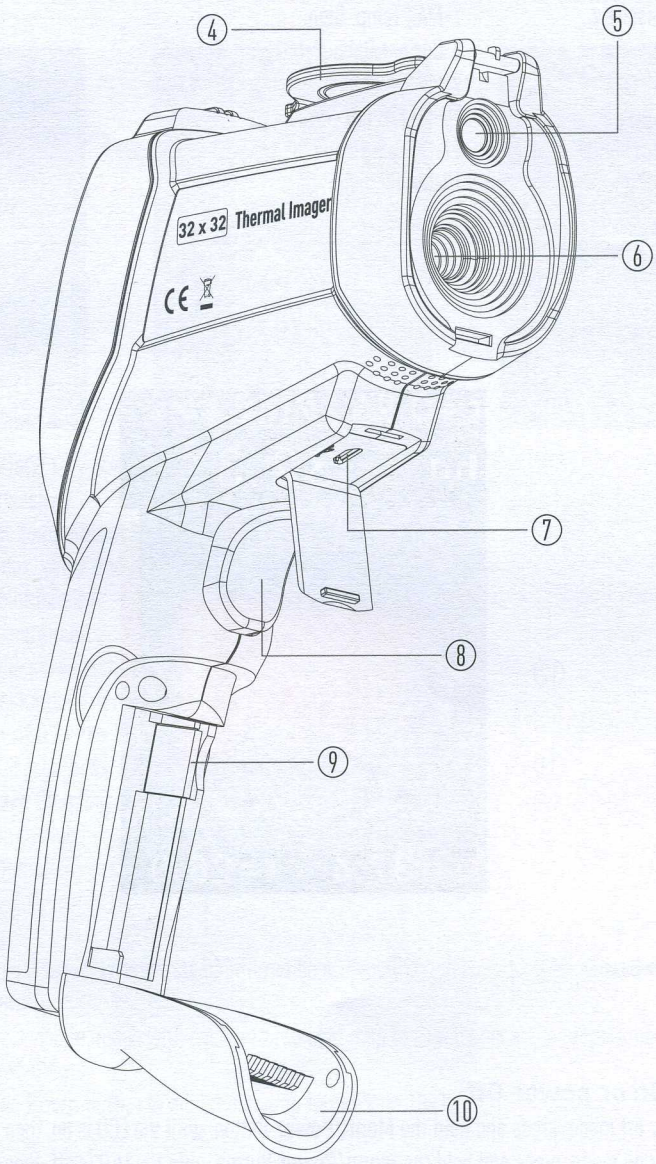
4.Discriptions

4-1.Structure Description

1-LCD Display
2-Buttons
  2.1-Menu/Power Button
  2.2-Up Button
  2.3-Enter Button
  2.4-Left Button
  2.5-Down Button
  2.6-Right Button
3-Hole for Tripod Insertion
4-Lens Cover
5-Visual camera
6-IR Sensor
7-USB Computer Interface Socket
8-Measurement Trigger
9-Micro SD Memory Card
10-Battery Cover



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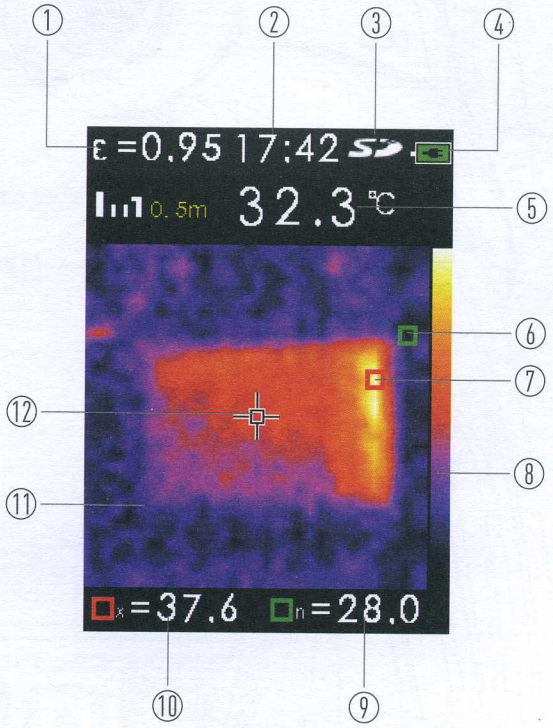
32 x 32 Thermal Imager

4-2.Display Icon and Indicator Description

1-Current Emissivity
2-Current Time
3-SD Card
4-Battery Level
5-Center Temp. Value
6-MIN Temp. Sign
7-MAX Temp. Sign
8-Current Color Palette
9-MIN Temp. Value
10-MAX Temp. Value
11-Current Image
12-Center Temp. Sign

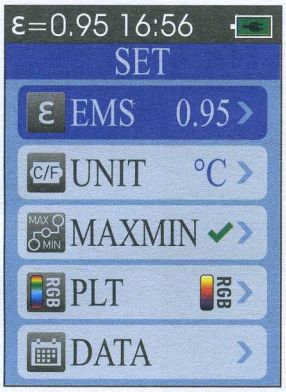


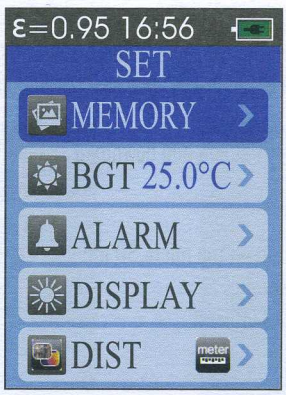
5.Power On or power Off

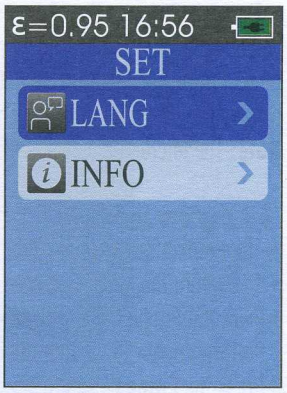
- On the power off mode, press and hold the **Menu/Power** Button, until the LCD is on, then the unit will power on.
- On the power on mode, press and hold the **Menu/Power** Button, until the LCD is off, then the unit will power off.

6.Menu Overview

6-1.Main Menu







Items	Description
EMS	Adjust emissivity
UNIT	Select the temperature unit
MXMN	Display max. value and min. value
PLT	Select color palette
DATE	Set date and time
MEMORY	Display the saved picture
BGT	Adjust Background Temperature
ALARM	Enable or disable the high alarm, low alarm and adjust value
BTNESS	Adjust LCD bightness
DIS	Selet Image Blending distance unit
LANG	Select languange
INFO	Show infomation

6-2.Image Blending

- Image blending makes it easier to understand infrared heat maps through the use of an aligned visible image and infrared heat map.
- The Product captures a visible image with each infrared heat map to exactly show the target area and more effectively share it with others.
- Please use the **Up** and **Down** Button to adjust blending form 0% to 100%.

6-3.Rechargeable Battery

- The 32x32 Thermal Image has a rechargeable Li-ion battery.
- Before using the device for the first time, charge the battery:

1. Plug the ac power supply into an ac wall outlet.
2. Connect the USB connector to the device.

- While the battery is charging, shows on the display "".
- When charged, "" shows on the display .
- The typical charge time from 100% discharged to 100% charged is 3 to 4 hours.

Note: Make sure the Product is near room temperature before you connect it to the charger, see the charging temperature specification, do not charge in hot or cold places, charging in extreme temperatures reduces the battery pack's ability to hold a charge.

Note: The Micro-USB cable is for battery charging and download images form micro SD memory card.

6-4.Capture and Save

- The Product saves up to 6,000 images/GB on the micro SD memory card.
- To capture the image and save it to memory:

1.Point the Product at the object or area of interest.
2.Pull the trigger to capture the image.
3.Press the **Enter** Button to save the image.
4.Press the **Menu** Button to cancel.

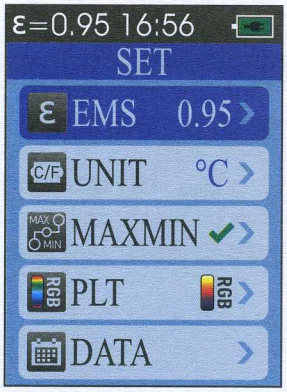
Note: A routine file back-up procedure is recommended for the micro SD memory card to store these files in a safe location.

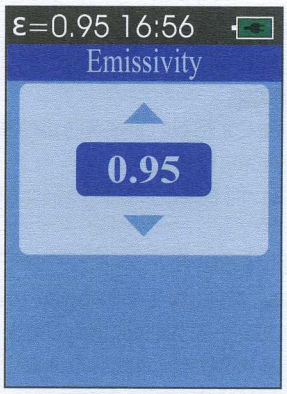
6-5.Menu Functions

- To open the display menu, push the Menu button.
- The menu has options for emissivity, unit, background temperature, hot and cold markers, date, and time, memory.

6-5-1.Adjust Emissivity

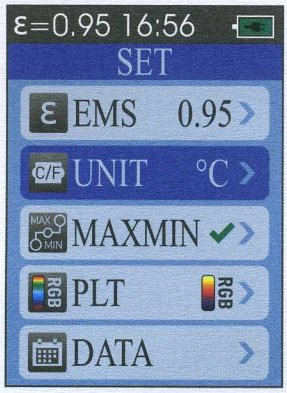
1.Press the **Menu** Button into Menu.
2.Press the **Up** and **Down** Button to select **EMS**.
3.Press the **Enter** Button.
4.Press the **Up** and **Down** Button to set emissivity.

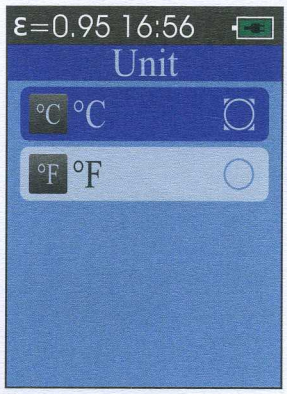




6-5-2.Select the Temperature Unit

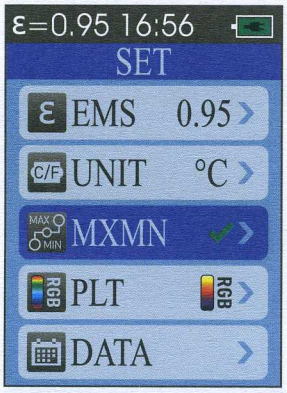
1.Press the **Menu** Button into Menu.
2.Press the **Up** and **Down** Button to select **Unit**.
3.Press the **Enter** Button.
4.Press the **Up** and **Down** Button to select the °C or °F.

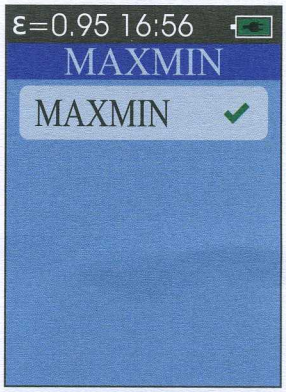




6-5-3.Display Max. Value and Min. Value

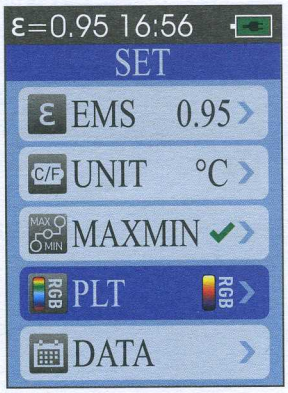
1.Press the **Menu** Button into Menu.
2.Press the **Up** and **Down** Button to select **MXMN**.
3.Press the **Enter** Button.
4.Press the **Enter** Button to display max. value and min. value.





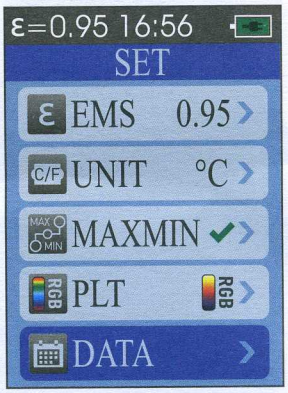
6-5-4.Select Color Palette

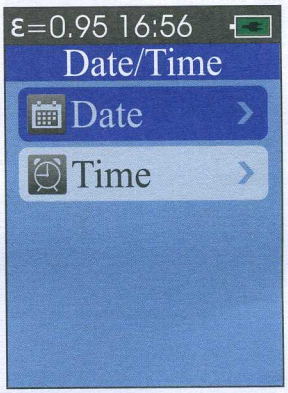
1.Press the **Menu** Button into Menu.
2.Press the **Up** and **Down** Button to select **PLT**.
3.Press the **Enter** Button.
4.Press the **Up** and **Down** Button to select color palette.

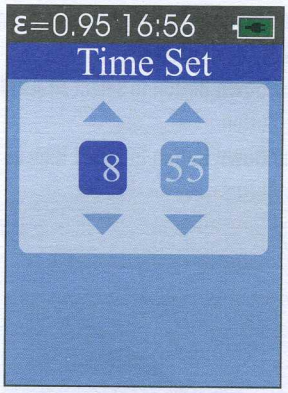


6-5-5.Set Date and Time

1.Press the **Menu** Button into Menu.
2.Press the **Up** and **Down** Button to select **DATE**.
3.Press the ENTER button.
4.Press the **Up** and **Down** Button to select Date or Time.
5.Press the **Enter** Button.
6.Press the **Up** and **Down** Button to set Date or Time.

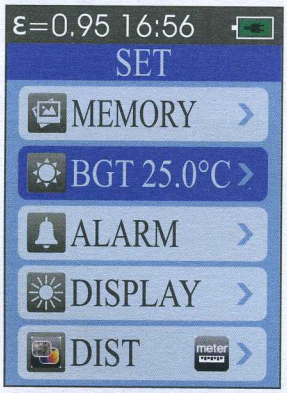






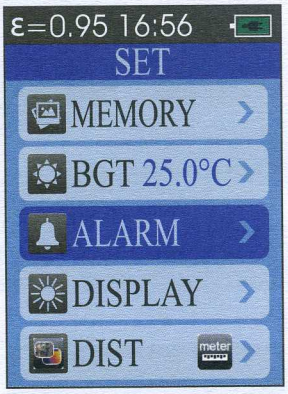
6-5-6.Adjust Background Temperature

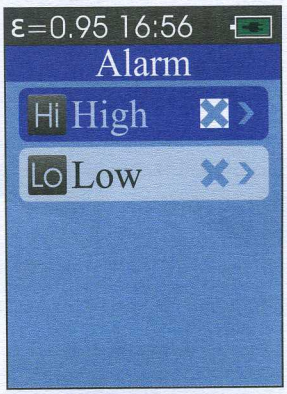
1.Press the **Menu** Button into Menu.
2.Press the **Up** and **Down** Button to select **BGT**.
3.Press the **Enter** Button.
4.Press the **Up** and **Down** Button to set Background Temperature.

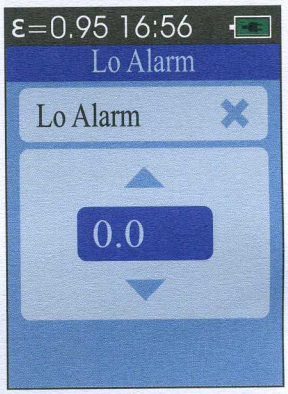


6-5-7.Enable or Disable The High Alarm, Low Alarm

1.Press the **Menu** Button into Menu.
2.Press the **Up** and **Down** Button to select **ALARM**.
3.Press the **Enter** Button.
4.Press the **Up** and **Down** Button to select High or Low.
5.Press the **Enter** Button.
6.Press the **Up** and **Down** Button to set High or Low alarm vlaue.
7.Press the **Enter** Button to enable or disable.

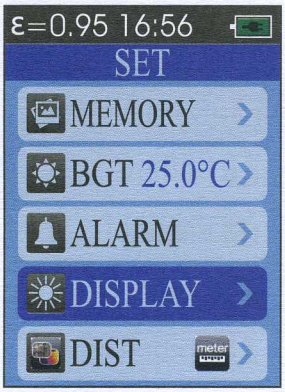


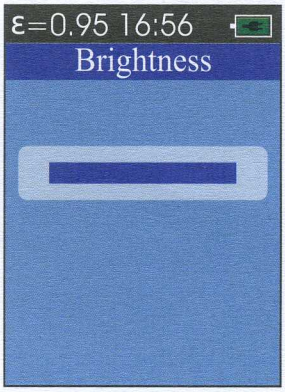




6-5-8.Adjust LCD Bightness

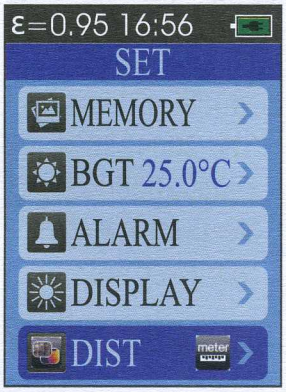
1.Press the **Menu** Button into Menu.
2.Press the **Up** and **Down** Button to select **BTNESS**.
3.Press the **Enter** Button.
4.Press the **Up** and **Down** Button to Adjust LCD bightness.

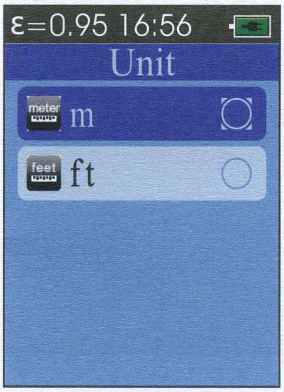




6-5-9.Selet Image Blending Distance

1.Press the **Menu** Button into Menu.
2.Press the **Up** and **Down** Button to select **DIS**.
3.Press the **Enter** Button.
4.Press the **Up** and **Down** Button to Selet Image Blending distance unit.



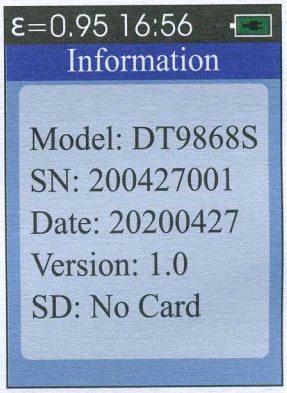


6-5-10.Selet Language

1.Press the **Menu** Button into Menu.
2.Press the **Up** and **Down** Button to select **LANG**.
3.Press the **Enter** Button.
4.Press the **Up** and **Down** Button to Selet language.

6-5-11.Show Infomation

1.Press the **Menu** Button into Menu.
2.Press the **Up** and **Down** Button to select **INFO**.
3.Press the **Enter** Button.



7.Emissivity

- Emissivity is a term used to describe the energy-emitting characteristics of materials.
- Most (90% of typical applications) organic materials and painted or oxidized surfaces have an emissivity of 0.95 (pre-set in the unit).
- Inaccurate readings will result from measuring shiny or polished metal surfaces, to compensate, cove the surface to be measured with masking tape or flat black paint, allow time for the tape to reach the same temperature as the material underneath it, measure the temperature of the tape or painted surface.

Emissivity Values

Substance	Thermal Emissivity	Substance	Thermal Emissivity
Asphalt	0.90 to 0.98	Cloth (Black)	0.98
Concrete	0.94	Human Skin	0.98
Cement	0.96	Lather	0.75 to 0.80
Sand	0.90	Charcoal (Powder)	0.96
Earth	0.92 to 0.96	Lacquer	0.80 to 0.95
Water	0.92 to 0.96	Lacquer (Matt)	0.97
Ice	0.96 to 0.98	Rubber (Black)	0.94
Snow	0.83	Plastic	0.85 to 0.95
Glass	0.90 to 0.95	Timber	0.90
Ceramic	0.90 to 0.94	Paper	0.70 to 0.94
Marble	0.94	Chromium Oxides	0.81
Plaster	0.80 to 0.90	Copper Oxides	0.78
Mortar	0.89 to 0.91	Iron Oxides	0.78 to 0.82
Brick	0.93 to 0.96	Textiles	0.90